

APPLICATION To plan a trip downtown, you compare the costs of three different parking lots. ABC Parking charges \$5 for the first hour and \$2 for each additional hour or fraction of an hour. Cozy Car charges \$3 per hour or fraction of an hour, and The Corner Lot charges a \$15 flat rate for a whole day.

- a. Make a table similar to the one shown. Write recursive routines to calculate the cost of parking up to 10 hours at each of the three lots.

Hours parked	ABC Parking	Cozy Car	The Corner Lot
1			
2			
3			

- b. Make three different scatter plots on the same pair of axes showing the parking rates at the three different lots. Use a different color for each parking lot. Put the hours on the horizontal axis and the cost on the vertical axis.
- c. Compare the three scatter plots. Under what conditions is each parking lot the best deal for your trip? Use the graph to explain.
- d. Would it make sense to draw a line through each set of points? Explain why or why not.
- e. What would the equations be for each parking lot?

- f. You must write a convincing report to the sponsors of your club/team, which recommends the most cost effective parking lot choice to them. How would you thoroughly explain the best choice to the sponsors?

12. a.

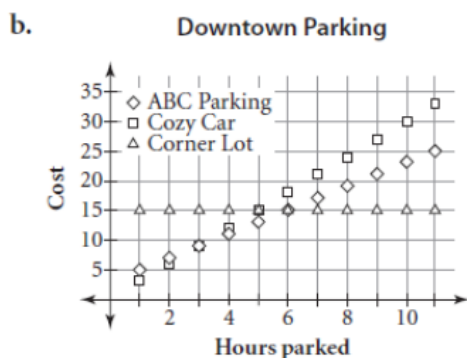
Hours parked	ABC Parking	Cozy Car	The Corner Lot
1	5	3	15
2	7	6	15
3	9	9	15
4	11	12	15
5	13	15	15
6	15	18	15
7	17	21	15
8	19	24	15
9	21	27	15
10	23	30	15

Possible routines:

ABC Parking: {1, 5} **ENTER**,
 {Ans(1) + 1, Ans(2) + 2} **ENTER**, **ENTER**, ...

Cozy Car: {1, 3} **ENTER**,
 {Ans(1) + 1, Ans(2) + 3} **ENTER**, **ENTER**, ...

The Corner Lot: {1, 15} **ENTER**,
 {Ans(1) + 1, Ans(2) + 0} **ENTER**, **ENTER**, ...



- c. If you will be parking less than 3 h, Cozy Car is the best deal. On the graph, its points are below the points for the other lots for “Hours parked” values less than 3. For exactly 3 h, ABC and Cozy Car cost the same. If you will be parked between 3 and 6 h, ABC Parking is the best deal; its points are lowest for that section of the graph. For exactly 6 h, ABC and the Corner Lot cost the same. If you plan to park more than 6 h, The Corner Lot is the best deal.
- d. No; because you have to pay for a whole hour for any fraction of the hour, the price of parking does not increase continuously.

e. What would the equations be for each parking lot?

$$y_{abc} = 5 + 2x$$

$$y_{cc} = 0 + 3x$$

$$y_{cl} = 15 + 0x$$

Note: x would be rounded up to the nearest whole number for each fraction of an hour.

f. You must write a convincing report to the sponsors of your club/team, which recommends the most cost effective parking lot choice to them. How would you thoroughly explain the best choice to the sponsors?

A report should be in the form of a letter. Letters include dates and salutations.

There is a clear, effective explanation detailing how the problem is solved. All of the steps are included so that the reader does not need to infer how and why the recommendations were made.

There is precise and appropriate use of mathematical terminology and notation to add credibility to the recommendation.

Referencing a table and graph supporting your recommendation would help the report be convincing.